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RESEARCH and DEVELOPMENT TECHNICAL REPORT

IR-0005

OPERATIONAL PLANNING: A STATUS REPORT ON KNOWLEDGE ACQUISITION WITH THE U.S. ARMY WAR COLLEGE

October 1987

U.S. ARMY COMMUNICATIONS-ELECTRONICS COMMAND
Fort Monmouth, New Jersey

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During the periods of December 1985 to March 1986 and December 1986 to March 1987, a series of knowledge-acquisition sessions were held involving scientists of the US Army Center for Command, Control and Communications of the Communications-Electronics Command (CECOM) and military planners of the US Army War College (AWC). The goal of the joint effort between these organizations was to identify the knowledge and methods experienced planners bring to bear when planning for military operations at the corps command level. This technical report summarizes the results, as concurred upon by the CECOM scientists and AWC planners, of this joint collaboration thus far. The content of this document should be considered as information requiring further analysis. It does not recreate the flow of the sessions, nor summarize the discussions that led to the development of the ideas presented. It does attempt to provide a coherent description of the ideas developed.

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WITH THE U.S. ARMY WAR COLLEGE

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ABSTRACT

During the periods of December 1985 to March 1986 and December 1986 to March 1987 a series of knowledge-acquisition sessions were held involving scientists of the US Army Center for Command, Control and Communications of the Communications-Electronics Command (CECOM) and military planners of the US Army War College (AWC). The goal of the joint effort between these organizations was to identify the knowledge and methods experienced planners bring to bear when planning for military operations at the corps command level. This Technical Report summarizes the results, as concurred upon by the CECOM scientists and AWC planners, of this joint collaboration thus far. The content of this document should be considered as information requiring further analysis. It does not recreate the flow of the sessions, nor summarize the discussions that led to the development of the ideas presented. It does attempt to provide a coherent description of the ideas developed.

TABLE OF CONTENTS

1. BACKGROUND. The U.S. Army War College (AWC) and the U.S. Army Communications-Electronics Command (CECOM) have jointly conducted a series of Knowledge Engineering (KE) sessions commencing December 1985 . A total of sixteen (16) sessions were conducted with the last session occurring in March 1987. The intent of the joint effort was to identify the knowledge and techniques experienced planners bring to bear when planning for military operations at the corps command level. This Technical Report summarizes the results to-date of this collaboration. It does not recreate the flow of the sessions, or summarize the discussions that led to the development of the ideas presented. It does attempt to present a coherent description of the ideas developed.

2. LIMITING ASSUMPTIONS. A number of assumptions were made to limit the scope of this effort.

    2.1 OPERATIONAL ENVIRONMENT. The study group will consider themselves to be officers in a plans cell of a heavy corps in a European environment. The corps is currently conducting operations in a mature theater. We are concerned with all plans cell activities which contribute to the development and maintenance of (alternative) Courses-of-Action (the terms "Concept", "Course-of-Action" and "COA" will be used interchangeably throughout the remainder of this document) for numerous contingencies. The group will be considering only the mental processes of the planners *as practiced* by the AWC participants. This final limitation means that this Technical Report does not necessarily reflect a doctrinal description of the planning process, but does reflect the accumulated experience of the AWC participants in performing the planning task in a variety of environments.

    2.2 LONG-TERM OBJECTIVES. The CECOM and AWC objectives for this project overlap, but are not identical. We are both concerned with developing a precise understanding of: 1) the information requirements of corps planners; 2) a Course-of-Action; and 3) the knowledge experienced planners possess which allows them to develop and maintain Courses-of-Action from information.

        2.2.1 CECOM Objectives. Additionally, CECOM is interested in formalizing the above understanding in computational terms. This will support future experimentation in automated decision aids for the planning function, with the idea of eventually fielding such aids as standard command post equipment.

        2.2.2 AWC Objectives. AWC is also interested in forming estimates on the applicability of Artificial Intelligence/Expert Systems for the various battlefield functional areas.

3. THE PLANNING ENVIRONMENT. At the corps level planning is a continuous process involving the full-time efforts of a number of officers of the Corps Plans Cell, and the efforts of others (e.g., Commander, Chief of Staff, G3) on an as-needed or desired basis. It is possible to characterize several dimensions of the environment within which planning is performed, including: the planning process, the planning function, and command post responsibilities related to planning.

    3.1 THE CONTINUOUS PLANNING PROCESS. Continuous planning is proactive (vs. reactive) and long-term. The concept of continuous planning is not well understood or practiced. The process as described in this document refers only to the actions of planners, and does not refer to the actions of other staff officers concerned with providing information critical to the planning process. Continuous planning requires the development and maintenance of alternative Courses-of-Action for contingencies. Course-of-Action maintenance involves the modification of a Course-of-Action based on changes in the situation for which the Course-of-Action is developed. Course-of-Action maintenance is not well understood. Continuous planning requires the maintenance of alternative Courses-of-Action for the current operation. This is required since these alternative Courses-of-Action may come into

focus as the operation is being conducted. In other words, it may become necessary or opportune to implement one of these alternative Courses-of-Action as the situation changes. The Continuous Planning process can be decomposed into several activities. The following figure illustrates these activities.

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| SITUATION UNDERSTANDING |

| RECOGNITION |

INFO GATHERING

CONCEPT DEVELOPMENT
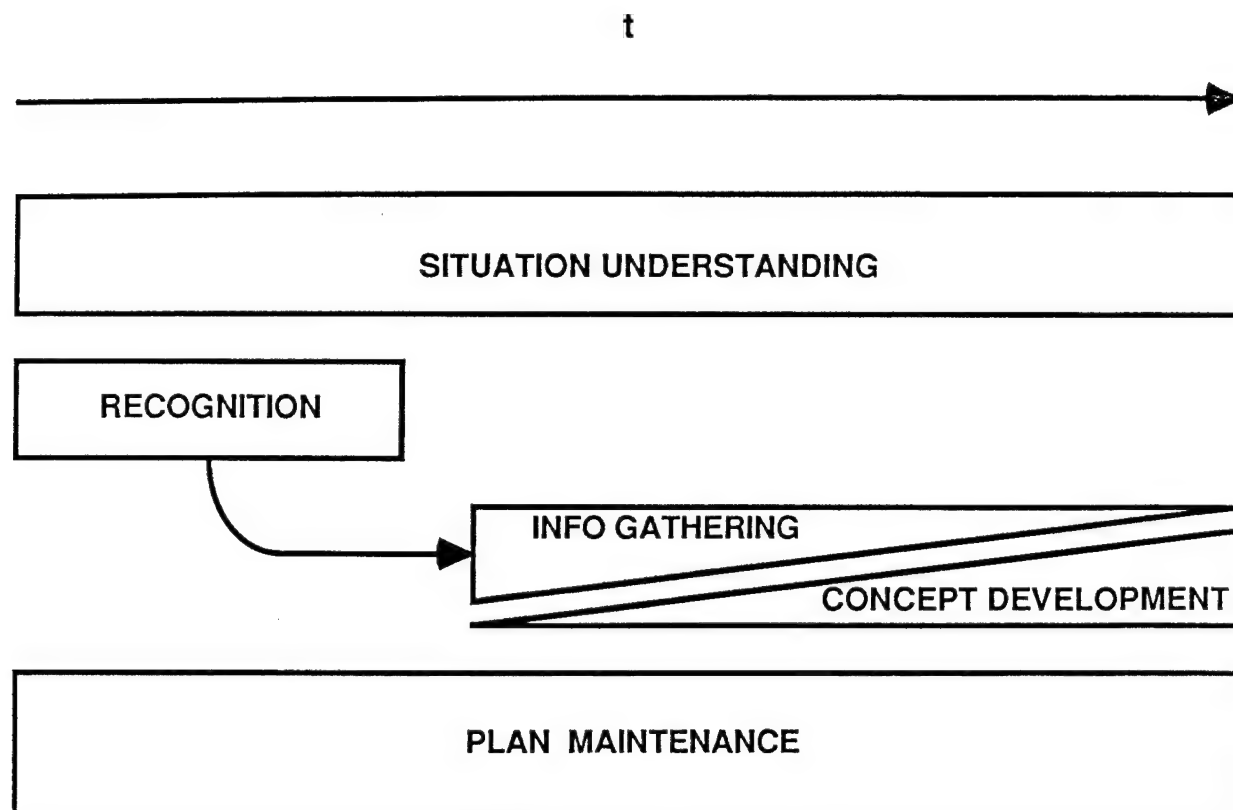
| PLAN MAINTENANCE |

3.1.1 <u>Situation Understanding</u>: This is a continuous effort not related to a specific plan or Course-of-Action. Continuous planning requires the capture and maintenance of information. This tracking of information is currently accomplished by the Intel and Current Operations cells, and the Tactical Command Post, but it is conducted to support current operations, not planning for future operations. What information is required to support continuous planning is not well understood.

3.1.1.1 Operations/Plans Interface. Issues to address include:
- When do situation changes require planning actions?
- How do planners become aware of this?
- When do planners turn a plan over to operators?

3.1.1.2 Commander's Intent. Commander's Intent is the critical element of situational understanding.
- There are identifiable features of Commander's Intent which are necessary to know before other phases of the process (Mission Analysis, situation assessment and Course-of-Action generation) are addressed. This implies that the process of understanding the Commander's Intent must be completed before the other processes are conducted.
- Understanding of intent must flow from two echelons above corps. Apparently only a general

concept understanding for the second echelon above is required.

    - Commander's Intent is a necessary element of a Course-of-Action. This implies that, for a corps Course-of-Action, the Commander's Intent element will address the corps Commander's Intent and the echelon above corps Commander's Intent. Corps planners also will consider the Comander's Intent for the two echelons above corps in developing this statement.

    - A Commander's Intent addresses, at least, strategic and operational goals for a particular time period, geopolitical considerations, and basic assets.

    - Commander's Intent provides a framework for resource allocation.

    - Commander's Intent should include identification of enemy Center of Gravity.

    - Commander's Intent is the biggest constraint on the types of COA's to be developed. It will influence what alternatives are to be developed.

    3.1.1.3 Information Classification. The information which all planners need can be grouped into eight operating systems, namely, command and control, maneuver, fire support, logistics, air-defense, etc. For each functional area within the plans cell, the level of detail of the information on the planning map should correspond to what appeared in the, say, Logstat and SITREP for the preceeding 24-hour period. This should provide the essential elements of information at the level required for each planner to do his planning or else he would not have asked for those items in the first place. Every factor such as air defense, fire support, mobility/counter-mobility, command and control, NBC, etc. has to be addressed relative to METT-T. For example, if you are going to talk about Mission, you have to ask whose mission. The functional areas have different missions, the services have different missions, etc.

    3.1.2 Course-of-Action Generation: Course-of-Action Generation can be decomposed into three general activities: Recognition, Information Gathering and Concept Development (these terms are not meant to mirror doctrinal terminology). All these activities collectively develop a Course-of-Action, or alternate Courses-of-Action, for a specific contingency. These activities are repeated for each contingency.

    3.1.2.1 Recognition. Recognition is the stimulus which initiates action on one (or a set of alternative) COA(s). It is the recognition that planning action is required to satisfy a potential operational requirement, or contingency, at some time in the future.

    3.1.2.1.1 *Source*. A number of potential sources for recognition were identified. These include:

    - Commander's Intent will lead to a distinct contingency(ies).

    - Commander's concern will lead to a distinct contingency(ies).

    - Distinct contingencies can be combined into another distinct contingency.

    -- Does not eliminate distinct contingencies which have been combined. They still need to be the subject of distinct planning efforts.

    - Receipt of warning order from higher headquarters.

    - Recognition that some new possibility exists. This may be generated from a number of sources in the command post (e.g., plans, ops, commander).

    - Clarification of previously fuzzy future situation.

    -- This often occurs when the higher command is conducting a multi-phased operation. In this case, the corps will often plan multiple phases per single higher command phase, with connector phases between higher command phases.

    -- It often becomes impossible to plan later phases of the operation in sufficient detail due to the presence of too many variables.

    -- As the operation is conducted it will become possible to sufficiently define the future situation to plan for later phases.

-- This is one of the basic mechanisms of continuous planning.

3.1.2.1.2 *Content*. There are potentially a number of data items associated with recognition which aid in bounding the operation. The data items are derived or selected from the information obtained by Situation Understanding.

3.1.2.1.2.1 *Commander's Intent*. Needs to be determined for the commander at corps and the two echelons above corps. This can be a continuation of or it can be a modification associated with the recognition.

3.1.2.1.2.2 *Commander's Concept*. Required at varying levels of specificity.
- Serves as initial strawman for later activities of process.
- May be multiple concepts.
- If not given by stimulus, then something needs to be generated before later activities are entered. Does not have to be specific - handwave often suffices.

3.1.2.1.2.3 *Contingency priority*.
- Commander directs is first priority.
-- May be contingency that is most likely.
-- May be contingency that most concerns him.
- Worst case or most likely is next priority.
-- Likelihood determination based on terrain and enemy force support for contingency.
-- Factors for choice.
--- Time available.
---- Decision Support Template (DST) is a useful tool in determining time available for contingencies. Particularly timelines and decision points associated with DST.
- Contingencies can be planned simultaneously.
-- This is desirable.
-- Incremental, iterative development.
-- Do them together.

3.1.2.1.2.4 *Enemy Force Knowledge*.
- Red Army Boundaries.
-- Blue Defense operation.
--- Boundaries can relate to blue force integrity of defense.
---- Boundaries that cross blue boundaries threaten integrity of defense.
-- Blue Counterattack operation.
--- Influence determination of worst-case contingency.
- Red Force Disposition.
-- Blue Counterattack operation.
--- Must assume where enemy will be at start of counterattack.
--- Initial considerations at army level.
- Red Force Operation.
-- Blue Counterattack operation.
--- Army level of consideration.
--- Attack type of operation.
--- Relationship to Blue boundaries a concern.

3.1.2.1.2.5 *Friendly Force Knowledge.*
- Major combat equipment types.
-- Tanks (M1 vs M60).
--- Principally a logistics consideration.
---- Division Support Command (DISCOM)
---- Corps GS maintenance.
--- Can expect cross-country movement difference for battalions in the vicinity
of 5 kph.

--- Combat speed for battalions essentially equivalent.
--- Can expect less combat attrition for M1 battalion.
- Forces Available.
-- Counterattack.
--- Uncomitted from defensive concept of operation.
--- Assume those conducting defense in concept are committed and not available
for major task.

--- Planning emphasis on assumed uncommitted forces.
--- For combined Reactive/Planned Counterattack must subdivide available
forces.

---- What it takes to reestablish integrity of defense (Reactive
Counterattack).

---- Remainder for Planned Counterattack.
--- Planned Counterattack. Counterattack force in defensive scheme with
Planned Counterattack are considered committed forces.
- Force Disposition.
-- Counterattack.
--- Must assume where we will be at start of counterattack.

3.1.2.1.2.6 *Terrain Knowledge.*
- Planned Counterattack.
-- Identification of areas not to attack.
-- Identification of areas that support maneuver, or Avenues of Approach.
--- Identification of amount of forces that can be accomodated on each.

3.1.2.1.2.7 *Mission Knowledge.*
- Counterattack.
-- Initial Planned Counterattack handwave comes from concept for defense.
-- Planned Counterattack is a continuation of initial defensive operation.
-- Handwave identifies how to get to objectives.
-- Two concerns of Mission Analysis for corps.
--- Mission Analysis of army group commander order and concept.
--- Mission Analysis of corps commander's planning guidance to develop
subsequent mission statement for corps and subsequent concepts.
-- Corps Boundaries
--- Place constraint on allowable movement of forces

3.1.2.1.3 *Mission Analysis.* The doctrinal activities of Mission Analysis are included within
Recognition. At the completion of the Mission Analysis the planners have developed the following information
items to be used by the remainder of the planning process:

- Tasks to be accomplished by the corps during the ensuing operation.
- Constraints under which the corps is to operate.
- An "understanding" of the intent of the higher commander in the ensuing operation. From this understanding of the commander's, it may be possible to develop a number of <u>evaluation criteria</u> for use in the following phases of the planning process. The remainder of this paragraph (3.1.2.1.3) enumerates these possible outputs of the Mission Analysis phase (potential evaluation criteria) of the planning process which would have an influence on subsequent phases of the process.

-- Time Constraints. Severe time constraints support development of plans which are simple to implement at lower levels (i.e., subordinate commands have a simpler planning problem) and simple to execute.

-- Implied Tasks. This includes both short-term objectives and long-term objectives.

-- Identification of Subsequent Operations.

--- Must finish operation in posture to do what is needed next. This will impact how you approach accomplishing objective.

--- Must finish operation in posture to support commander's subsequent operation.

---- For example, if the corps mission is to conduct a limited counterattack to secure an objective, the commander's intent in directing the counterattack may be either of 1) seize and retain terrain objective, or 2) capture terrain to facilitate deep counterattack with Axis through objective. These options dictate different allowable postures upon completion of the counterattack and different subsequent operations for the corps.

--Be Prepared Constraints.

--- Missions. These can influence the type of operations you can conduct.

--- Lose a designated element (name or type) of your force.

---- These will impact corps' use of the force, in that they have a certain level of commitment they cannot breach.

---- Corps must be prepared to adapt to the loss of the force.

-- Availability of Fire Support Assets from outside corps.

--- Echelon Above Corps (EAC) operations (e.g., deep interdiction) may imply the EAC assets will not be available for corps.

--Preservation of Force vs. Accomplishment of Objective. When preservation of the force is given priority, the following is true.

--- More likely to impact how tasks will be accomplished than what tasks will be accomplished. Less likely to conduct high-risk operations.

--- Normally more important to operations than planning.

--- Counterattack less likely.

--- If conducted, depth of counterattack would be less.

-- Constraints on Reserve Force.

--- Size of reserve.

--- Position of reserve.

--- String on commitment of reserve. This could particularly effect maneuver, fire support and aviation elements.

---- Commit only with higher command approval.

---- Constraint on time to react to contingency.

--Constraints on Covering Force.

--- Size of covering force.

---- Attrit enemy well forward implies strong covering force.

---- Develop something early implies strong covering force.

---- Forward divisions need time to deploy implies strong covering force.

--- Time of covering force action.

    ---- Forward divisions need time to deploy implies the duration of the covering force action will extend at least until divisions can deploy.

    --- Covering force activity .

    ---- Covering force needed for further operations implies no decisive engagement.

    ---- Don't let covering force fall below certain strength implies limitation of covering force activity.

3.1.2.2 Information Gathering. Information gathering is the activity of determining the information required for COA development, acquiring this information if available, and producing this information if not available. In general terms, the intent of the information gathering activity is to determine the characteristics of the situation that can influence the corps' capabilities to perform its mission regardless of which particular Course-of-Action it develops. The Plans Cell will attempt to forecast relevant elements of the battlefield situation between now and some point in the future, when the corps expects to conduct some operation as part of the performance of the corps' mission. Information gathering is characterized by interplay between functional areas within the plans cell, and interplay between the plans cell, other cells within the command post, and the functionally specialized units.

3.1.2.2.1 *Information Requirements*.

3.1.2.2.1.1 *Baseline Situation Descriptions*. Functional area reps within plans cell will obtain detailed baseline situation description for their functional areas. This baseline situation description is tailored based on the information produced by the recognition activity, and information developed by other functional areas. Baseline descriptions will be obtained for own forces, subordinate forces, and higher command forces (if available for use/tasking) within functional area. Baseline descriptions will include as much projection of the future, based on continuance of the current operation, as is available.

    - Friendly Forces Baseline Description.

    -- Range of echelons. Doctrinally, the corps fights with divisions, brigades and battalions but in practice planners probably only plan and fight with Brigades.

    --- Battalions are the smallest level unit that corp planners can move around.

    ---- Planners are concerned primarily with maneuver Battalions.

    ---- There is such a large number of Battalions in a corps that planners probably do not think in terms of Battalions.

    --- Combat and Combat Service Support (CSS) elements are managed at Brigade level. From a G3 planner's perspective, information on Battalions is used to think about combat power ratios. However, it is not certain that one can fight over extended periods thinking in terms of Battalions because fighting is the culmination of a lot of work above Battalion level.

    --- Planners need to know which Battalions are his, what each unit's combat readiness value (color code) is, its type (mechanized or armor), and general location.

    --- Planners need to know differences between their Brigades (e.g., mechanized- vs. tank-heavy).

    --- Organization (peacetime vs. combat) might be different and planners must be made aware of this.

    -- Combat Status. Division, Brigade and Battalion units need to be color-coded for each of the four standard readiness items (equipment, personnel, fuel and ammunition) in terms of their percentage of combat readiness. The color coding indicates combat readiness of each unit whether it is in action or in reserve. For example, the color yellow may indicate the category is at less than 60%, whereas the color green may indicate that the status is at least at 60%. Some formulae exists for combining the values of the four categories to produce a

single category called combat effectiveness which can have one of two possible values (combat effective and combat ineffective). If a unit is combat ineffective then it cannot be used. The combat effectiveness status of the unit drives the estimate of what the planners will need in order to make the unit combat effective.

-- Logistics

--- The only important piece of information which planners need to know about Brigades' transportation capabilities is that the Brigade commander can dictate the use of Supply and Transportation (S & T) platoons inside of Battalions. Therefore, the Brigade commander can marshall truck assets if necessary.

--- Information on truck assets is necessary.

--- One Corps Service Command (COSCOM) responsibility is to supply Divisional and non-Divisional support. For example, in Divisional support, if his Brigade or DISCOM assets go down, the COSCOM would need to know that information. They would also need to know how well the Division could service itself. If status was lower than TO&E allocation then the COSCOM would have to provide the Division with the necessary assets to move with respect to the its local situation. Divisions have limited capabilities logistically (even heavy Divisions) and almost always require logistic support from COSCOM.

--- Brigades are not just the sum of their combat assets but include their logistics assets also.

--- At each echelon there is a wartime 2715 (unit-readiness report) which, in peacetime, includes logistics, personnel and training (not included in wartime). The data in this report is aggregated at battalion level and flows up to corps. Corps gives this information to the COSCOM in order to react, in terms of maintenance, to degradation of combat units. Thus, the corps planner has visibility, logistically, from a very low level all the way through each echelon up to and including theater.

-- Ammunition.

--- As a planner, the only information on ammo availability required is to know whether there is enough. The problem of determining whether there is the right mixture of ammo is a problem for Division level.

--- Types and quantities of rounds available, and how they can be moved to desired locations is information provided by the COSCOM and the G4.

--- Planners also need to know if weaponry and designators effective against the enemy are available and can be moved to desired locations. This information impacts forecasting by planners.

-- Intelligence Electronic Warfare (IEW).

--- Current status of equipment and any expected problems. This information is provided in terms of equipment types such as jammers, collectors, etc.

--- Task organization of IEW elements as specified by Division.

--- In direct support of Brigade or general support of Division.

--- Current status and activities of units.

-- Fire Support.

--- Kinds of air support available to corps.

--- Types of airframes available to corps.

--- Weapons mix.

--- Available munitions.

---- Available high-tech munitions (e.g., Copperhead or laser-guided bombs).

--- Resupply rates.

--- Changes in ammunition usage (Planners need to influence requests and allocations of ammunition. After a change in usage is detected, it takes at least 24 hours for a change in resupply flow to manifest itself in an artillery battalion.).

--- Unit status (similar to description given above for maneuver units).

--- Available number of minutes and meters of illumination on the ground for a particular geographic area.

--- Available quantity of smoke for a particular geographic area.

--- Changes in command relationships (e.g., General Support (GS) vs. General Support Reinforcing (GSR)) of artillery at Division level.

--- Status of acquisition systems (status of intelligence collection systems determines munitions that can be used both from ground and air standpoints).

--- Designation systems. The essential information here is to know whether the critical designator systems are available or not. It would be nice to know the following:

---- Weapons requiring them.

---- Types available.

---- Status.

---- Locations.

---- Limitations.

- IEW baseline description.

-- Intelligence Estimate. Estimates of capabilities and intentions should be in the intelligence estimate and other IEW periodic reports.

-- Templates/IPB. Numerous terrain templates/overlays assist in providing the baseline descriptions. Three enemy force template types are used at corps level in the IPB process. At least one, the Decision Support Template, is of use in planning.

- Logistics baseline description.

-- Logistics status.

-- Logistics capabilities.

- Personnel baseline description.

3.1.2.2.1.2 *Status of adjoining forces*. Information on these is required.

3.1.2.2.1.3 *Status of joint (air force, navy, etc.) forces*. Information on these is required.

3.1.2.2.1.4 *Status of higher command forces*. Information on these is required.

3.1.2.2.2 *Information Development*.

- Want to define what corps operation will do between now and point in future planners are trying to forecast.

- Want to define what forces (red and blue) will look like at point in future planners are trying to forecast. Red side must be as well thought out as blue side.

- Want to define capabilities of forces at future points in time.

3.1.2.2.3 *Functional Area Interplay*.

- The interplay between the functional area specialists within the plans cell assists in development of the baseline functional area description.

- The interplay between the functional area specialists within the plans cell will also serve to more precisely define the general concept(s) initially developed by the Recognition activity.

-- This aids functional area specialists in developing the information required for the COA Development activity.

-- Ideally, functional area specialists need combat scheme of maneuver and timelines for execution. In other words, phases of operation and timelines for phases.

3.1.2.2.4 *Specific Functional Area Information Requirements*.

3.1.2.2.4.1 *Required by the G2 Planner*.

- Battlefield Area

-- Area of operations.

           -- Area of influence.
           -- Area of interest.
    - Terrain
           -- Vegetation.
           -- Surface material.
           -- Surface drainage.
           -- Surface configuration.
           -- Obstacles.
           -- Lines of communication.
           -- Observation.
           -- Fields of fire.
           -- Concealment.
           -- Cover.
           -- Key terrain.
           -- Avenues of approach.
           -- Mobility corridors.
           -- Cross-country movement (wet and dry).
           -- Slope (go and no-go).
           -- Built-up areas.
           -- Air avenues of approach.
           -- Drop zones.
           -- Landing zones.
           -- Hydrology.
    - Weather
           -- Light data
             --- BMNT, BMCT, EECT, EENT, moonrise, moonset, percent of illumination,
etc.

           -- Climate (historical summary).
           -- Precipitation.
           -- Ceilings and visibility.
           -- Fog.
           -- Temperature.
           -- Winds (surface and aloft).
           -- Humidity.
           -- Weather forecast.
    - Threat Forces.
           -- Range of echelons from army level.
             --- Two echelons up.
             --- Two echelons down.
           -- Specialized Functional Entities.
             --- Regimental Artillery Groups.
             --- Division Artillery Groups.
             --- Operational Maneuver Group(s) (OMG) at enemy force Front level.
               ---- Exploitation force to achieve a specific objective like seizing crossing
sites on rivers or seizing a key installation (G2 Planner wants to know OMG's objectives - this information is
provided in intelligence estimate).
               ---- Probably corps size.
               ---- Committed when advantageous.
               ---- Probably a tank-heavy force (probably 2 tank divisions and 1 mech.
division).

---- Looks at targets probably 100-200 km behind the Forward Line of Troops (FLOT).

---- Less important than Front's first and second echelon to the G2 Planner.

-- Commanding Officer.

-- Status.

--- 1st echelon, or 2d echelon, or Follow-on.

--- Committed or uncommitted, time-to-commitment.

-- Organization.

-- Tactics.

-- History.

--- Jamming.

-- Doctrine.

-- Composition.

--- Capability Differences of Soviet Mechanized vs. Armor Divisions. Major difference is equipment.

---- Mechanized division is balanced in that the number of tanks approximately equal number of APCs.

---- Armor divisions are not balanced because they are armor heavy.

---- Tanks are limited in maneuverability and target engagement compared to mech vehicles.

---- Tanks move faster.

---- Tanks are more survivable unless defender has good anti-tank capability.

-- Disposition.

-- Strength.

--- Committed forces.

--- Reinforcements.

--- Air.

--- CBR.

--- Relative strength.

--- Logistics.

-- Training.

-- Relative mobility.

-- Templating.

--- Doctrinal.

--- Situation.

--- Event.

--- Decision. One of the information products produced by the intelligence cell and used by planners is the Decision Support Template (DST). The friendly forces influence on the enemy force will be included in the development of the DST. The DST is very much the result of an "if-then" type of process. The intelligence cell produces two types of DST: one for current operations and one for planned operations (a particular friendly force Course-of-Action).

-- Politics.

-- Economy.

-- Personalities

-- Recent and present significant activities.

- Enemy Capabilities.

-- Attack.

-- Defend.

-- Reinforce.

            -- Delay.
            -- Withdraw.
            -- CBR.
            -- Air.
            -- Indications of enemy intentions.

        - Enemy Vulnerabilities. A vulnerability is something to exploit which gives the friendly force an advantage (usually vulnerabilities are associated with equipment). Some types of vulnerabilities include:

            -- Not equipped to handle NBC.
            -- Combat ratio in friendly favor because of enemy disposition.
            -- Lack of bridging equipment.
            -- Lack of close-air support.
            -- Maneuverability limitations.
            -- Rigidity in command and control (doctrinal).
            -- Personnel (less than 80%).
            -- Morale/health.
            -- Logistics.
            -- Tactics.
            -- Personalities.
            -- Equipment (less than 80%).
            -- Mobility.

        - Enemy Course-of-Action.

            -- Most likely.
            -- Objectives.
            -- Who, what, when, where, in what strength.
            -- Advantages/disadvantages.
            -- Center of Gravity. This is what the enemy will concentrate on. For example, if Red forces believe it's necessary to seize and/or control a particular terrain feature in order to make the critical penetration of Blue forces (which will split the corps), then this particular terrain feature is the Center of Gravity of the Red forces. If Blue forces prevent him from seizing or controlling that terrain feature, then the Red force will lose.

            -- The following table shows the factors addressed in a COA for an enemy force Front based on echelon levels of the enemy force. The intelligence estimate is on the Front. Time estimates refer to times when the enemy will reach objectives and times when the enemy will begin an action.

Echelon	Final Obj	Daily Interm	Daily Ultim	AA	Ident	Spatial Relations	Air & Arty Support	Tactical Types	Time Estim.
FRONT	X	X	X		X	X		X	X
ARMY		X	X		X	X	X	X	X
.									
.									
DIV		X	X	X	X	X	X	X	X
.									
REGT					X	X			

- Friendly Course-of-Action
-- Where to maneuver, shoot, jam and communicate.
-- When to maneuver, shoot, jam and communicate.
-- What to maneuver, shoot, jam and communicate with.
-- What to maneuver, shoot and jam.
-- What results to expect.

3.1.2.2.4.2 *Required by the G4 Planner.* It is extremely important that the G4 be kept in the decision cycle of the U.S. commander. Also, a major function of the G4 in the plans cell is to give broad, long-range guidance for planning to the COSCOM, but to not do the work himself. The G4 needs to remember all friction points that can occur that are unknown such as morale and fatigue of the troops, etc. It should be noted also that levels at division and below do not have asset visibility over all things the G4 has at corps. And at theater level they have alot more assets available that could be useful to the corps. These assets may provide a solution if corps was given main priority of effort (on some operation). The point is that the corps G4 Planner might be able to provide a solution using theater assets that were not available or known to COSCOM. Information of the types listed are used by the G4 Planner in his identification of the logistical shortfalls and solutions to such shortfalls. Coordination would be hard-copy, telephone, radio, or a visit to various echelons like COSCOM, DISCOM, theater Army Area Command (TAACOM), and Transportation Command.
- Terrain. Overlay provided by COSCOM. G4 in plans cell would either retrieve the overlay himself, have it FAXed, or use some other method to get it. Many other bits of detailed information would be required by the G4 in the plans cell.
-- Main supply routes.
-- Rail-lines.
-- Airfields.
-- Waterways.
--- Rivers, canals, lakes, bays, oceans.
-- Bridges.
-- Obstacles.
-- Overpasses.
-- Urban areas.
-- Ports.
-- Weather conditions.
--- Mud, snow, ice, fog.
-- Percent slope of roads.
-- Off-road capability.

- Troops Available.
-- Location of combat forces and combat service support (CSS) forces of all armed
services.

-- Functional status of CSS services.
-- Number of days of supply for all classes of supply.
-- CSS available from host nation and allies. The G4 Planner uses this information
to determine how the CSS from host nation and allies could alleviate the corps' logistical shortfalls. CSS from host
nation and allies is one of the major ways of alleviating such shortfalls.
- Pipeline to the rear of friendly forces. The G4 Planner uses this information to
determine what CSS would be coming to friendly forces. This assessment of the pipeline would project back to the
seaports and would be a principal concern of the logistician with respect to developing future plans. The pipeline
represents another major way to alleviate logistical shortfalls.
- Time.
-- Quantity available. The G4 Planner needs to know the time constraints on
identifying all of the various bits of information that are necessary to reach a logical decision regarding logistics.

3.1.2.2.4.2 *Required by the Communications Planner*. The following information items are
critical in determining communications measures.
- Information from other functional area specialists in plans cell.
-- Intelligence Preparation of the Battlefield (IEW).
-- Terrain for operation (IEW).
-- Special communications requirements.
--- Technical requirements, such as interfacing to allies.
--- Communications to/from a specific location or towards a specific direction.
--- Necessity to maintain communications to a particular person or between
persons.

--- Special requirements for a particular unit (OPS).
-- Phases of operation (OPS).
-- Specific information requirements (OPS, IEW).
-- Support prioritization (OPS).
-- What information needed at what point of operation (OPS).
-- Control Measures in effect (OPS).
-- How corps is going to echelon (OPS). Will determine how to break down corps
signal brigade.

-- Translated Commander's Intent (OPS). Looking for constraints on what can be
done with signal assets.

-- What kinds of combat losses are expected (OPS). To support redundancy planning
and loss preparation.

-- How will corps displace elements and where are critical points during
displacement.
- Information from without plans cell.
-- Status of all equipment that can be called on. Equipment of higher/lower/
subordinate.

-- Support ability of higher headquarters.
-- Host nation support ability.
-- Capabilities estimates.
- Information to functional area specialists in plans cell.
-- Estimate of communications support capabilities given certain operation (OPS).
-- Estimate of communications risk in providing specific types of support for
specific operations. Risk is tied to ability to support operations in the future (OPS).

-- Communications key terrain (OPS). This key terrain estimate is based on three considerations: 1) where to position major C^2 elements; 2) where high density communications entities (e.g., LOC's, corps artillery) will be located; and 3) terrain to support communications in most uninterrupted manner for displacing elements.

    - Planned counterattack.
        -- Size of force in counterattack.
        -- Actions/timetable for other corps elements when counterattack occurs.
        -- C^2 arrangenents for counterattack force.
        -- Support arrangements for counterattack force.

3.1.2.2.5 *A Model of the Situation Assessment Process; The G2 Perspective*. Figure 1 shows a model of the different functions, and their relationships to each other, as performed by the G1, G2, G3 and G4 Planners. The arrows indicate logical dependencies between the functions. The notation on the arrows indicates the staff area performing the function. The G2 Planner he would want to know just the output of the "Estimate Enemy Course-of-Action" function and the basis for the estimate. Figure 1 was described as follows:

    - Start with the information needed to evaluate the battlefield area.
    - Simultaneously analyze the terrain, weather, and enemy threat.
    - Simultaneously identify capabilities and vulnerabilities of the enemy force.
    - Develop an enemy force Course-of-Action.
    - Combine input from G1, G2, G3 and G4 to develop a Course-of-Action for the friendly force.
    - Do situation development and target development.
    - Time required for plan implementation should also be taken into consideration.

3.1.2.3 Concept Development. Continuous planning is proactive (vs. reactive) and long-term. For purposes of this document the Course-of-Action Generation process commences upon receipt of a new mission (to include commander's guidance and intent) from any source, and terminates upon completion of the alternative courses of action (or single course of action). There is no clear break between the activities of information gathering and Concept Development. Perhaps it is best understood as two activities that progress simultaneously, initially with an emphasis on Information Gathering, but gradual change to emphasis on Concept Development. It is understood that this is in contradiction with the process as described by doctrine (FM 101-5) in that the separate staff analyses are not required. However, the planners agreed that in the European context, the staff analysis at corps consisted of attempting to identify "aberrations" in the situation, and, in the absence of these aberrations (radical changes in the situation, caused by the loss of continuity of the operation), the planners will deal with staff information in its routine form. One aberration significant enough to merit special attention is when the corps is forced to change its environment (terrain and opposing force) as a result of the new operation. In that case, the planners must wait for the production of the detailed staff information. A second significant aberration occurs when there is a change in the operation type to be conducted (e.g., attack is changed to defend). Normally the higher command's mission statement for the corps will contain sufficient information to determine whether or not a detailed staff analysis is required. Course of action generation can be subdivided into five phases which are commonly, but not always, performed in a predictable sequence.

```
                    ┌─────────────────────────┐
                    │   Identify  Battlefield  │
                    │          Area            │
                    └─────────────────────────┘
                              │ G2
                              ▼
┌───────────────────────────────────────────────────────────┐
│  ┌──────────────┐   ┌──────────────┐   ┌──────────────┐    │
│  │   Terrain    │   │   Weather    │   │   Threat     │    │
│  │   Analysis   │   │   Analysis   │   │  Evaluation  │    │
│  └──────────────┘   └──────────────┘   └──────────────┘    │
└───────────────────────────────────────────────────────────┘
                              │ G2
                              ▼
┌───────────────────────────────────────────────────────────┐
│     ┌──────────────┐          ┌──────────────┐             │
│     │   Estimate   │          │   Estimate   │             │
│     │    Enemy     │          │    Enemy     │             │
│     │ Capabilities │          │Vulnerabilities│            │
│     └──────────────┘          └──────────────┘             │
└───────────────────────────────────────────────────────────┘
                              │ G2
                              ▼
              ┌─────────────────────────┐
              │    Estimate   Enemy     │
              │   Course of Action      │        ┌──────────────────┐
              └─────────────────────────┘        │ Friendly  Forces │
                  │  ◄── G1,G2,G3,G4 ─────────────│ Situation        │
                  ▼                               │ Assessment       │
              ┌─────────────────────────┐        └──────────────────┘
              │   Generate  Friendly    │
              │   Course of Action      │
              └─────────────────────────┘
                  │
                  │ G1,G2,G3,G4
                  ▼
        ┌─────────────┴─────────────┐
        ▼                           ▼
┌──────────────────┐        ┌──────────────────┐
│   Situation      │        │     Target       │
│   Development    │        │   Development    │
└──────────────────┘        └──────────────────┘
```

FIGURE 1

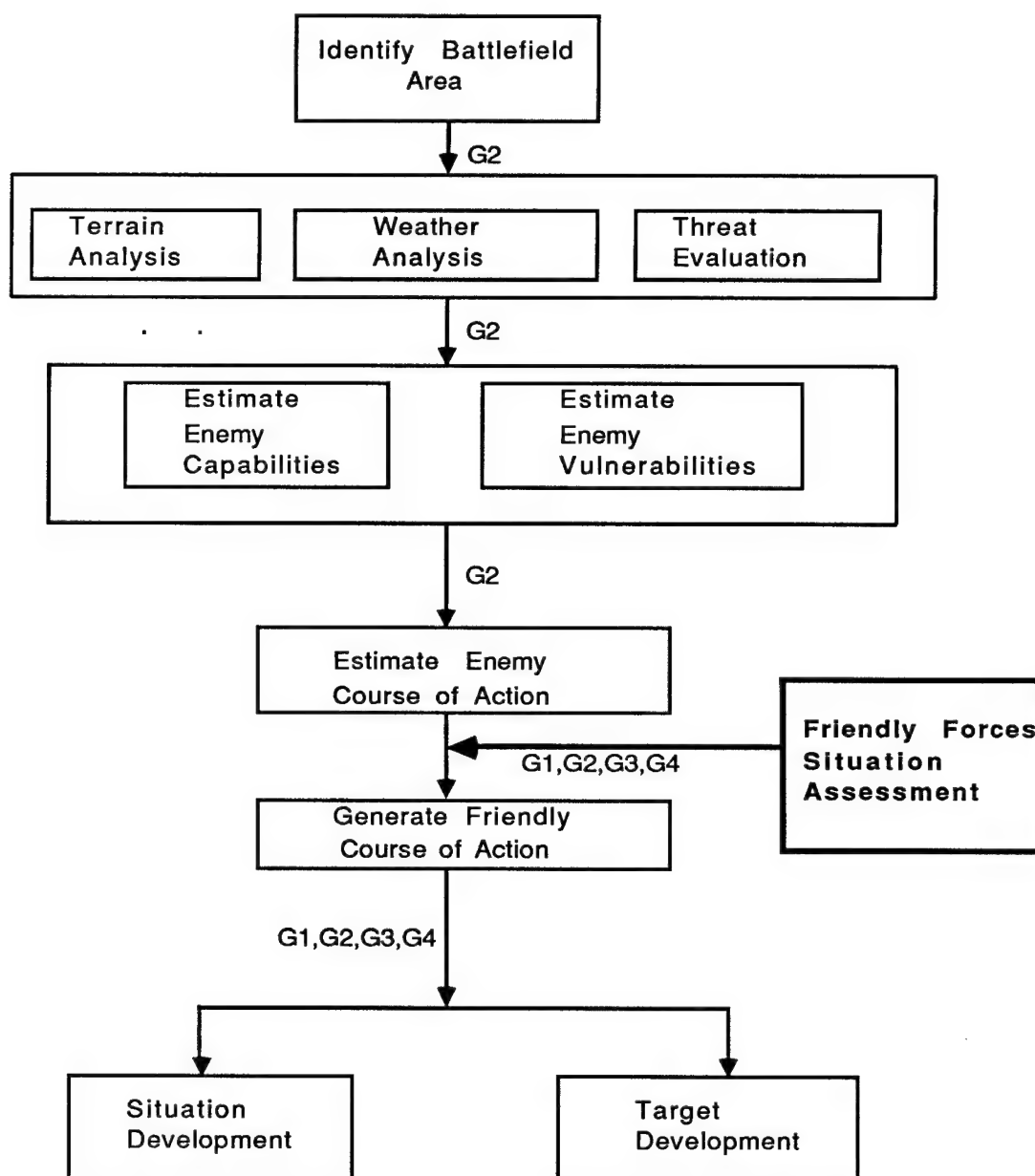3.1.2.3.1 _Scheme of Maneuver (SM) Development_. The SM is developed first. All factors of METT-T must be considered in developing the SM. At a minimum, the commander's understanding of the METT-T factors must be verified. From the above it is clear that this does not require a separate staff analysis effort unless an aberration is noted. The Scheme of Maneuver is discussed in more detail in paragraph 4 below.

3.1.2.3.2 *Task Organization (TO) and Task Allocation (TA)*. After development of the SM, a TO can be developed and tasks allocated. These phases must be pursued in parallel and decisions made in either will effect decisions to be made in the other. The TO and TA are discussed in more detail in sections 5 and 6, respectively.

3.1.2.3.3 *Command and Control (C^2) Measures*. After developing the SM and TO and performing the TA, it is possible to specify the C^2. The C^2 consists of a number of elements, which include:

- Synchronization of Operations (this is the key element). Synchronization of force activities is critical to fighting the battle but it does not happen very often. Synchronization is the responsibility of the commander and the individual running the TOC (G3; Chief of Staff, whoever). The functions performed in the TOC cannot be done independently of one another.
- Communications measures, to include the allocation of corps' signal assets
- Command post(s) location(s).
- Reporting mechanisms.
- How to control the battle.
- Control Measures.

3.1.2.3.4 *Support Priorities (SP)*. As an alternative to TO changes, support priorities can provide a combat multiplier impact. The SP is discussed in more detail in section 8.

3.1.2.3.5 *COA Generation Process*.

3.1.2.3.5.1 *General Description*. Given general intent (or general guidance about what to pursue) of the commander or G3, the operators in the plans cell will develop a relatively small number (probably 3 or 4) of skeletal schemes of maneuver. The operators will present these skeletal schemes of maneuver to the functional area specialists within the plans cell (i.e., the Personnel, Logistics and Intelligence individuals and the non-operators of the G3 area) and ask for an assessment of these schemes from the perspective of each functional area. The assessment may involve getting information from the technical entities (COSCOM, DIVARTY, Intelligence Cell, etc.). Each functional area representative in the plans cell will report back to the operators regarding the schemes of maneuver in terms of such things as how well each scheme of maneuver can be supported (the functional area representatives may need more information from the operators before they can give their assessments). Having received these assessments, the operators will evaluate each skeletal scheme of maneuver and either: (a) discard it from further consideration at this point in time, (b) keep it but not develop it further at this point in time, (c) modify it so that it is another skeletal scheme of maneuver (which they may present to the functional area representatives at the current time or at some time in the future, or (d) keep it and begin developing it into a complete course of action. This is an iterative process.

3.2 THE PLANNING FUNCTION. The following statements characterize the planning function as practiced at the corps level in the European environment in an active context.

3.2.1 Corps Plans Cell. An Army of Excellence TO&E for the corps G3 planning section has yet to be adopted. However, based on the division G3 planning section TO&E, which has 13 majors representing the combat, combat support and combat service support functional areas, it is presumed that the section will contain officers of the combat, combat support and combat service support functional areas. The purpose of this section is to develop the operations plans. The functional area representatives are actively engaged in the planning activity, contributing advice and analysis on the aspects of the plan involving their area of expertise (e.g., the intelligence officer is concerned with the intelligence aspects of the operations plan, the logistics officer with the logistics aspects of the operations plan). They do not provide situation information (the staff does this), nor do they develop the functional (e.g., intelligence collection or logistics) plans and annexes (staffs maintain their own plans sections) which

implement the operations plan.

3.2.2 <u>Plans Cell Planning Problems</u>. The corps plans cell reacts to the commander, the Chief of Staff, or the G3. The commander tells the planners what he wants to achieve (i.e., his intent) and may tell the planners, to some degree, how he intends to achieve it (i.e., his concept of the operation). Planners have autonomy in developing detailed plans for fulfilling the commander's intent and his concept of the operation. Planners also have autonomy in the sense that if they have finished a plan and it has been approved (i.e., they have met all the current planning requirements of the G3), then planners may think of other plans on which to work. Planners must get approval of the G3 before they pursue development of these plan ideas. Planning problems can be initiated from a number of sources and can result in different types of planning activity. The following describes the sources of planning problems and the corresponding types of planning activities that may result.
- Higher Headquarters.
-- New Order. This results in a planning activity similar to what has been described in the planning process model.
-- Be Prepared Mission. This results in a similar planning activity. It is expected that these missions will be received more often as the situation becomes more fluid.
-- Warning. These are normally received from the higher plans staff and indicate possible future activities. It is important to note that the commander's intent is normally not available for problems of this type. In this case it is necessary to plan in general terms and develop several options which can be used when the specifics are received through one of the other two mechanisms.
- Corps Headquarters. Corps generated planning problems are concerned with the continuation of the operations required to accomplish the last received EAC mission. In this case it seems that the EAC commander's intent remains unchanged. However, the corps commander's intent may be modified.
-- Current operations generated problem. The operations section is the recognizer. It is important for the plans officer to coordinate routinely with the operations section to determine future requirements, and what is most likely to be implemented. In this case it is also necessary to plan in general terms.
-- CDR/G3 generated problem. The plans officer should not be surprised if this occurs. Planning activity conducted to satisfy the first type of planning problem should be immediately applicable.

3.2.3 <u>Other Corps Planning Problems</u>.
- Operations section planning. The operations section can generate plans sufficient for short-term follow-ons to current operations. In general, if the fragorder can be satisfied with an overlay, then the operations section can perform the planning.
-- Exception: The operations section is too stressed to perform the activity.
-- Exception: The personalities involved (particularly the commander) may influence this general rule.
-- In any exception, the Plans Cell would perform the required planning. Actual performance will depend on decision of G3.
-- A special case exists if need is recognized in Tac CP by CDR and/or G3. Since no Plans Cell exists in Tac CP, CDR/G3 with operations section assistance would perform planning activity.

3.2.4 <u>Situation Projection Requirements</u>. The necessity to "look into the future" is motivated by two operational requirements, the corps reserve and the deep battle.
- Committment of corps reserve.
-- When and where to commit reserve is the most important decision corps will make.
-- Commitment of reserve takes time and cannot be stopped. Decision must be made in sufficient time to allow commitment at decisive place at correct time.
--- Time and space movement requirements. Reserves are large formations that take space on roads, and take time to prepare for movement. Additionally, reserves are normally placed away from contact to keep them from being attacked.

--- Planning time requirements.

--- Time required to prepare for operation upon commitment.

- Deep Battle. Special planning cell exists to plan for deep battle operations.

- Doctrinal expectation of 72-hour projection is best viewed as a goal (In the experience of the session participants, it is realistic to expect a decent projection for 24 hours).

- Context. Given the identification of friendly force capabilities and a concept for which planners will develop a number of friendly force Courses-of-Action, all planners will try to estimate the battlefield situation for some point in time in the future (which needs to be determined based on an event that needs to occur, or a time given by higher headquarters, or possibly other things).

- Methods. Two wargaming methods the planners would use for this estimation problem were identified.

-- React/Counter-react Method. The planners would start with a general scenario. They would try to predict the enemy's reaction to a friendly force operation in a particular location. Next, the G2 planner would predict the enemy force reaction to particular friendly force Course-of-Action. The react/counter-react cycle can be played out to some future point in time.

-- Trend-extrapolation Method. The planners will use historical information based on the current engagement with the enemy to estimate the situation for the desired future point in time. Weeks, days or months of engagement with the enemy will probably allow identification of trends in enemy behavior. For example, if the enemy continues to attack for the next three days (most likely enemy Course-of-Action), then he is likely, based on his history with our forces, to gain 6 km/day and therefore be in location x-ray at a particular time.

- Estimating the Battlefield Situation .

-- Planners will try to estimate (for some desired future point in time) strengths of the enemy force (G2 Planner) and friendly force.

-- Planners will try to identify areas where the friendly commander can influence what the enemy forces will do.

-- The G2 Planner has to make estimates of how the enemy would react if the friendly force did a particular thing.

-- One part of friendly force Course-of-Action generation is to wargame each Course-of-Action to see what will happen.

-- Target Times for the Estimates

--- The G4 Planner must look out, in some cases, to weeks and beyond.

--- The G2 Planner probably would not estimate what the enemy situation will be much beyond 96 hours into the future. At corps, intelligence assets for looking beyond 96 hours do not exist. It requires theater and national level assets to collect this information; so corps relies on higher headquarters to provide this information.

--- If the corps has a long enough engagement history with an enemy force, planners might make a guess at what the enemy will be doing a week from the present time.

---The corps may develop courses of action for 24 hours into the future. Planning operations that cause divisions to maneuver requires a minimum of 24 hours just to get the divisions doing something different than what they are presently doing.

--- If the commander has not told planners the particular time he wants a course of action executed, planners will ask the G3 for this information. The one-third two-thirds rule generally is used for allocating the proportion of time to be used for planning at corps.

- Wargaming

-- The intelligence estimate planners get from the intelligence cell is needed before wargaming is started. The planners will take the intelligence estimate and produce their own estimate of the battlefield situation for the desired point in time when they expect the new course of action to be executed. This particular estimation process is situation assessment; not wargaming.

-- "What if" drills will be done for red and blue force actions (or lack of ability to take certain actions) at particular points in a course of action.

-- Alternative Courses-of-Action of the friendly force will be wargamed to try to determine which one is best for achieving the desired enemy reaction.

3.3 CORPS COMMAND POST RELATIONSHIPS.

3.3.1 Tactical CP.
- Facilitate current forward battle.
- Concerned with activities along the FLOT and forward of the FLOT to the extent they influence the FLOT.
- Synchronizes and integrates resource allocations to forward elements in order to influence forward battle.
- Operations cell but no plans cell.

3.3.2 Main CP.
- Integrates forward and rear battles.
- Conducts deep battle.
- Obtains resources for all battles.
- Plans cell and current operations cell.

3.3.3 Rear CP.
- Conducts rear battle.
- Integrates rear battle into overall operation (maneuver with logistics).
- Liaison with higher headquarters.

4. SCHEME OF MANEUVER.
An initial discussion of the SM development process, which was conducted to develop a general characterization, succeeded in producing tentative agreement about something along the lines of the following:

Developing a Scheme of Maneuver consists of selecting a number of possible SM parts from a larger collection of known parts; and then constructing (assembling) the Scheme from these selected parts.

From this characterization it is apparent that three elements of the SM development process merit further analysis: the collection of known parts, the selection activity, and the construction (assembly) activity.

4.1 SCHEME OF MANEUVER PARTS.
In refence to the characterization of the SM development phase given above, the following statements further characterize the term used. **PARTS** are ways of doing things, and contrast to the sections, or **CATEGORIES**, of the Scheme discussed in FM 100-5. In a complete SM, all of the categories of the SM are "assigned" an appropriate part or parts. Assigning a different part to a category provides a different way of doing what the category says needs to be done. Many parts come from individual experience and are not specified by doctrine. Parts are best described by graphics and/or pieces of text.

4.1.1 Doctrinal Category Listing.
A partial (doctrinal) list of categories of the SM includes the following (this list was extracted from FM 100-5):
- An outline of force movements.
- Objectives.
- Areas to be retained.

- Zone, sector or area responsibility.
- Maneuver options which may develop during the operation.
- Defensive counterattack maneuver.
- Airspace control.

4.1.2 <u>Alternative Category Listing</u>. The AWC participants expressed the opinion that these categories adequately reflected doctrine as expressed in FM 100-5, but did not reflect the actual categories they used when developing an SM. When considering their thought processes as they performed this activity, they were able to identify six categories that were consciously addressed. Based on this recognition, the decision was made to redefine the SM categories into the following set. Parts, then, could be easily viewed as alternative means of answering these questions.

- Who?
- What?
- When?
- Where?
- How?
- Why?

4.1.3 <u>Part Enumeration</u>. The following enumerates the parts identified by the AWC participants. The enumeration is organized by the category to which the part may be assigned. It is important to note that the parts are not mutually exclusive, in that a given situation may result in several parts being used in the same category. However, within a category, there are parts that may not be used together. Where identified as such during the discussion they are also identified as alternatives below. Another important note is that many of the parts are not sensitive to the type of operation, and can be applied to their category independent of the operation type. Again, where identified as such during the discussion they will also be identifed below.

4.1.3.1 Who. The <u>Who</u> category identifies the major subordinate elements the corps will have available for the operation. The parts available for this category are different from the other categories in that they are part of the METT-T factors themselves. The Troop List details the complete set of parts the planner has available. The Task Organization under which the corps is currently operating provides the initial decision point for identifying the <u>Who</u> parts the planner will use. The planners task in addressing the <u>Who</u> category is to determine whether the parts listed in the current Task Organization is sufficient, and, if not, what modifications need to be made. When the <u>Who</u> parts have been selected, the planners will have identified the unit or units that the rest of the Scheme will tell what to do.

4.1.3.2 What. The <u>What</u> parts describe the major (and some minor) operations the units are to perform. When the Scheme of Maneuver is complete there will be at least one <u>What</u> part selected for each <u>Who</u> part selected. If the Conduct part is selected, then another <u>What</u> part may also be selected. If more than one <u>What</u> part is selected (neither of which is a Conduct), then the Scheme of Maneuver will direct their performance in sequence. The following <u>What</u> parts were identified:

- Attack.
- Defend.
- Delay.
- Move.
- Prepare. Prepare can be constrasted to Be Prepared, in that Prepare tells a unit that it will perform another <u>What</u> in the future, although the other <u>What</u> part is not identified. It refers to a sustaining type operation in which the unit makes ready for general operations. It is not a contingency. Contingencies are covered by the Be Prepared directive. It was decided not to further discuss the Be Prepared directive. A Prepare mission will involve a significant amount of physical activity.
- Conduct (other potential terminology is "Associated Operations"). A Conduct <u>What</u> identifies

the minor operations associated with the overall Scheme. Specifically, Conduct will include activities that involve less than the total force of the controlling unit. It is a grouping of related, specialized activities in support of another What given that force. Conduct activities are also selected from a collection of parts, which includes:

-- Raids.
-- Patrolling, to include or exclude ambushes.
-- Reconnaissance.
-- River crossing, if corps mission is related to river.
-- Screening operations.
-- Deception operations, although this part could also be selected for the Why category.
-- Covering Force operations. These operations are identified as a Conduct part since the Covering force operation is not a discrete form of maneuver, and is conducted as part of something larger. Normally, however, for the unit conducting the covering force, a Conduct Covering Force operations part will be the only What part assigned.
-- Spoiling attacks.
-- Offensive operations. Included in this would be actions such as a Reconnaissance-in-Force.
-- Move. To contrast this with the What part Move, this movement would be as part of, or in preparation for, another activity.
-- Airmobile operations.
-- Airborne operations.

4.1.3.3 When. The When parts provide alternative means for specifying the times that the selected What parts will be either started, completed, or conducted within (duration). When the Scheme of Maneuver is completed there will be a When part associated with every What part. Each subpart of a Conduct What part will also also have a When part associated with it. These latter When parts are normally duration parts.The following When parts were identified:

- ASAP.
- A specified time.
- Daylight.
- Dark.
- H-Hour, or a time to be identified, from which other times will be computed.
- End Evening Nautical Twilight (EENT).
- Begin Morning Nautical Twilight (BMNT).
- Activity dependent, or upon something else happening.
- On Order.
- No later than (NLT).
- No earlier than (NET).
- Upon receipt. This normally applies to a planning activity.
- From/To, where the from and to are other When parts.
- Between (same comment as From/To).

4.1.3.4 Where. The Where parts provide alternative means for specifying the locations that the selected What parts will be either started from, completed at, or conducted within. When the Scheme of Maneuver is complete there is a single Where part associated with each What part. The case may be that a single Where part may be associated with more than one What part. The following Where parts were identified:

- Terrain objective.
- Geographic designation.
- In Zone (offensive operation).
- In Sector (defensive operation).
- Along Axis.

- Direction of Attack.
- Cardinal Direction. A cardinal direction would include a distance, a reference location, and a direction. For example, " 100 kilometers east of the IGB" would constitute a cardinal direction. Note that the distance may be zero.
- Distance From/To, where the from and to are other Where parts.
- Route.
- Enemy Force, where the enemy force designation could include disposition information. An example of this is the Where part "the flank of the first echelon division".
- Friendly Force. A Where part may be specified by a relation to a Where part of another friendly force. An example of this is the Follow relation.

4.1.3.5 How. The How parts provide alternative means for accomplishing the What parts. Most, if not all, How parts can be associated with a single What part. When the Scheme of Maneuver is completed each What part will have a set of How parts associated with it. There is no necessary restriction on the number and selection of these How parts other than those designated as alternatives are not associated with the same What part at the same time (When part).The following lists the How parts by their association to the corresponding What part:

- Attack.
-- Hasty.
-- Deliberate. Alternative with Hasty.
-- Supported.
-- Unsupported. Alternative with Unsupported.
-- Main.
-- Supporting. Alternative with Main.
-- Illuminated.
-- Non-illuminated. Alternative with Illuminated.
-- Mounted.
-- Dismounted.
-- Combination Mounted/Dismounted. Alternative with Mounted and Dismounted.
-- Deep.
-- Shallow. Alternative with Deep.
-- Narrow.
-- Broad. Alternative with Narrow. The corresponding Where part also reflects this. Zone, Axis, Direction, Route indicate narrowing of the attack.
-- Frontal.
-- Flank.
-- Reconnaissance-in-Force. This could also be listed as a subpart of the Conduct What part.

-- Daylight.
-- Night. Alternative with Daylight.
-- Pure.
-- Task Organized. Also termed Cross-Attached. Alternative with Pure.
-- With Preparatory Fires.
-- Without Preparatory Fires. Alternative with With Preparatory Fires.
-- Mode factors. These are often not explicitly stated, and could also be reflected in Why and Where parts.

--- Speed. More emphasis on speed implies more likely to bypass places of resistance.

--- Tempo, or degree of violence.
- Defense.
-- Defend.

-- Delay.

-- Withdraw.

-- Rear Area Protection. Separate kind of Action.

-- Static (positional) Defense. The emphasis is on holding terrain.

-- Active Defense. Emphasis is on destroying forces. Alternative with Static. The two can be combined by giving them to <u>What</u> parts that are associated with different <u>Who</u> parts.

-- Counterattack. Offensive form of defensive operation.

-- Spoiling Attack. Offensive form of defensive operation. This is conducted forward of FLOT. A preemptive attack in the form of ground maneuver, artillery or air, or any combination.

-- Point Defense.

-- Economy of Force.

-- Hasty.

-- Prepared.

-- Main Battle Area. Alternative with Hasty and Prepared. They reflect differences in degree of preparation and length of time to stay.

- Operation independent.

-- Priority of Fires. This is time-phased, in that at different times this part may be associated with different <u>Who</u> parts, but at any time it prioritizes the <u>Who</u> parts.

4.1.3.6 Why. The <u>Why</u> parts detail the commander's intent. Although there is no requirement to place a <u>Why</u> category (this is almost always the case in the development of FRAGORDs) into the disseminated Scheme of Maneuver, the AWC participants felt that all good Schemes did possess a <u>Why</u> category. Even if the <u>Why</u> parts are not included, it is necessary to decide on them when developing the Scheme. When the Scheme of Maneuver is complete there will be one or more Why parts which relate to the overall Scheme and one or more Why parts associated with each What part. The following lists the <u>Why</u> parts:

- Destroy Enemy Forces.
- Seize Terrain.
- Retain Terrain.
- Secure Terrain.
- Seize Initiative.
- Retain Initiative.
- Deny (any of above).
- Break Contact.
- Establish Contact.
- Retain Contact.
- Maintain Contact.
- Facilitate Future Operations.
- Facilitate Other (simultaneous) Operations.
- Disrupt.
- Delay.
- Deceive.
- Canalize.
- Continue.
- Reinforce.
- Extract.
- Move or Maneuver.
- Protect.
- Consolidate.
- Reorganize.
- Reorient or Redirect.

- Relieve.
- Exploit.

4.2 PART SELECTION. It is possible to describe the part selection process at different levels. Several statements can be made concerning each of: The selection of parts within categories, a general process for selecting parts, relationship of the METT-T factors to part selection, and a general category sequence for part selection.

4.2.1 <u>Category Knowledge</u>. It is possible to describe the general part selection process by giving a general description of the knowledge which supports each category, as follows:

4.2.1.1 Why Parts. The appropriate <u>Why</u> parts for the corps are either given, or obvious. Their selection is driven by the mission and EAC commander's guidance. This is not necessarily true for the <u>Why</u> parts for the corps' subordinates.

4.2.1.1.1 *Restore integrity of defense*.
- Does not require attack for What section of task description.
- Can also be accomplished by blocking position.
-- Blocking position can be sized.
-- Blocking position can be placed.

4.2.1.1.2 *Deception*.
- Want separate task for unit carrying out deception.
- Corps attempts to deceive either TVD (Theater) or Front or both. Most likely TVD.
- TVD interested in division capabilities and movements.
-- Must deceive TVD about division-level activities.
--- Use of Avenue of Approach (AA) is not important.
--- Division objective is important.
--- Who division will fight is important.
-- Must deceive TVD about division-level locations.
- Need to know what enemy looks for in identifying divisions to create deception.

4.2.1.2 What Parts. The appropriate <u>What</u> parts are driven, if not given, by the mission.

4.2.1.2.1 *Defense*.
- Corps Task must shape battlefield to facilitate subsequent operations.
-- Will influence Where section of subordinate tasks.
-- Accomplish geographic disposition of forces at some time out.
- Defense includes "win" mechanism.
-- Element of defensive scheme that will win the battle.
-- Options.
--- Counterattack can be win mechanism (Planned Counterattack).
--- Retain terrain can be win mechanism.
- All defenses need contingency for counterattack.
-- Planned Counterattack.
--- This is normally the win mechanism if included.
--- Must contain enemy advance.
--- Forming a pocket with defense is one way to contain advance. Terrain considerations can support use of a pocket. Friendly force heavy maneuver composition supports using a pocket. A pocket in this case is defined as a tactical situation in which the following holds: 1) the ability (terrain and force combination) to stop the advancing enemy force is present; and 2) the ability (terrain and force combination) to stop

the enemy force method of attack is present. In the cited context, stopping method of attack means preventing following echelons from bypassing stopped first echelon.

    -- Reactive Counterattack.

      --- This normally restores win mechanism if executed.

      --- Restores conditions that allow success.

4.2.1.2.2 *Counterattack*.

    - There are at least two potential purposes that can be associated with a counterattack.

    -- Counterattack to restore the integrity of the defense. This will be termed a "Reactive Counterattack" for the remainder of the document.

    -- Counterattack to secure objectives forward of the current main battle area. In this case the counterattack is an integral part of the defense. It is the win mechanism for the defensive scheme. This will be termed a "Planned Counterattack" for the remainder of the document.

    - Planned Counterattack. Generally implies four tasks for subordinates. These tasks are added to the tasks for the original defense.

    -- Contain enemy advance.

      --- Form pocket is one option to contain defense.

    -- Hold flank of main attack.

    -- Punch through enemy lines.

    -- Conduct main attack.

    -- Task 2 (hold flank), Task 3 (punch through), and Task 4 (main attack) are additional tasks of counterattack Scheme of Maneuver.

    -- Tasks for defending units in counterattack.

      --- Situational issue for each subordinate and should be decided separately.

      --- Generally desirable to have them revert to attack.

        ---- Attack need not be conducted from defensive positions.

      --- Criteria for determination.

        ---- Ammunition availability. Ammunition shortages support remaining in defense.

        ---- Occupation of strong defensive positions support remaining in defense.

        ---- Desire to destroy enemy forces in contact support remaining in defense.

        ---- Desire to minimize casualties support remaining in defense.

        ---- Estimates that enemy force has not reached culminating point in operation support remaining in defense.

        ---- Estimates of non-ability to conduct attack support remaining in defense. Contributors to this estimate may include estimated attrition, consumption and fatigue. These estimates are relative to enemy forces in contact. Necessary information for estimates include time duration of operation, distances to be moved during operation, and size of enemy forces opposing operation.

    - Reactive Counterattack.

    -- Attempt to control unplanned salient created by enemy force action.

      --- Option 1. Push back salient.

      --- Option 2. Cut off salient.

      --- Option 3. Cut off and eliminate salient.

      --- Option 4. Stop salient growth.

      --- Will select option which is doable and best supports defense scheme win mechanism.

    - Passage of lines.

    -- Executed by battalions.

    -- Controlled at brigade.

    -- Forces united at brigade level at passage time and point.

--- Common commander.

--- One brigade works for other to effect passage. Normally passing force comes under control of stationary force.

4.2.1.2.3 *Deception.*

- Create a division-sized signal signature for smaller unit.
-- Normally no spare equipment for performing this.
-- Must accept signal risk elsewhere.

4.2.1.3 How Parts: The selection of appropriate How parts is heavily reliant on the situation as expressed in the METT-T factors. There are two summary measures of METT-T which are particularly useful in selecting the How parts: Relative Strength and Relative Mobility. See also What Parts for further discussion of How Parts knowledge.

4.2.1.4 Who Parts: The selection of Who parts is also influenced heavily by the METT-T factors. It is common to consider METT-T factors not previously considered when selecting Who parts.

4.2.1.4.1 *General.* In performing this task the planners consider the following factors.
- Costs/penalties associated with potential modifications. A principal cost would be the time required to effect the change.
- Components (of elements in task organization).
- Past performance of Task Organization. The inclination is to keep a good thing going.
- Availability of forces (numbers).
- Types of forces.
- Relative strengths of forces.
- Current locations of forces.
- Relative proficiency of forces. This would include experience.
- Orientation and personality of the force commander.
- Spirit of the force.
- Maintenance status of the force.
- Mobility of the force.
- Logistics status of the force. This is most often less important than the other factors since the cost to change this are often less than the cost to modify the existing task organization.
- CG direction can include number of entities to consider.

4.2.1.4.2 *Counterattack.*
- Not realistic to expect subordinate that is main effort in defense to also conduct main effort in counterattack.
- Separate Brigade and Division Available.
-- Planned Counterattack Task/Brigade sufficient for punch through enemy forces in contact.
--- Three options available. Division option assigns division task for punch-through and for movement to objective. Division-Brigade option splits tasks. Division-Division option assigns punch-through task to the division in contact at site of passage. Control of Separate Brigade in all options goes to punch-through task. The following diagram reflects the relationship between these options and criteria that follow.

Planned Counterattack

Corps Control

Division

Division-Brigade

Division-Division
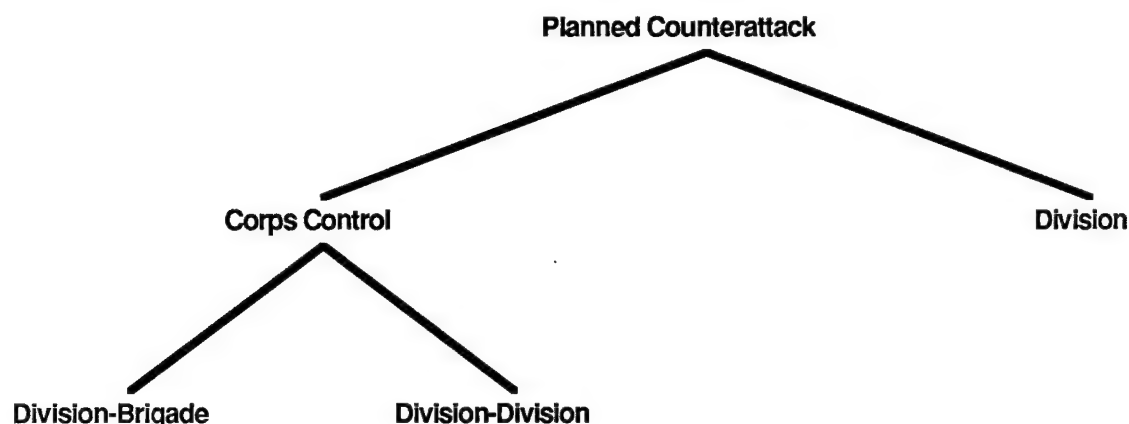
--- Decision Criteria.

---- If initial objectives of breakthrough force are distinct and separate from the terrain the movement force will use then there is support for Corps Control options. Independently evaluated contributors to separateness are: 1) geographic distinctness; 2) distance; 3) necessity for breakthrough force to secure dominating terrain.

---- If breakthrough force and movement force are to fight different echelons of the enemy force then there is support for Corps Control options.

---- If there is no dominating terrain in breakthrough area and forces will be mixed during passage then there is support for Division option.

---- If size of two tasks is too much for one commander to control then there is support for Corps Control options.

---- If divisions and separate brigade cannot communicate then there is support for Division-Brigade option.

---- If corps cannot support another major subordinate command (MSC) then there is support for Division or Division-Division options.

---- If movement division cannot support another major subordinate command (MSC) then there is support for Corps Control options.

---- If defending division cannot support another major subordinate command (MSC) then there is support for Division or Division-Brigade options.

---- If there is a deception requirement then there is support for Corps Control options.

---- Expected physical locations of units at start of operation. Closeness provides support for division control in execution. Separation provides support for corps control in execution.

---- Commander capabilites. CG estimate of relevant commander's abilites to orchestrate required actions. Relevant commanders include division CG's and corps deputy CG.

---- Equipment types. Dissimilarities in equipment types supports the Corps Control options.

---- If two battles will occur simultaneously then there is support for Corps Control options.

---- Subsequent mission for either force supports Division-Brigade option.

---- Separate axes supports Division-Brigade option.

4.2.1.4.3 *Deception*.

- Implies weighting force with signal assets to provide deceptive electronic signature.

- Separate force for deception task.

4.2.1.4.4 *Armored Cavalry Regiment*.
- Particularly suited for semi-autonomous operations.
    -- Terrain prohibits lateral movement into or through sector.
- Suited for high-level control and coordination, such as boundary coordination.
- Planned Counterattack.
    -- Long distance supports movement of ACR with win force.
    -- Weaker enemy force supports ACR with win force.

4.2.1.4.5 *Separate Brigade*.
- Can treat as stand-alone unit. Not necessary to put them under some kind of package.
- Can be assigned a task.

4.2.1.5 Where Parts: The selection of Where parts is also influenced heavily by the METT-T factors. It is common to consider METT-T factors not previously considered when selecting Where parts.

4.2.1.5.1 *Defense*.
- Extremely important in shaping battlefield.
- Likely to be specified geographic locations for subordinate tasks.

4.2.1.5.2 *Counterattack*.

4.2.1.5.2.1 *Reactive Counterattack*.
- Need to address where the mass of enemy forces are.
- Control salient.

4.2.1.5.2.2 *Planned counterattack*.
- How to get to objective is answer for Where section of planned counterattack.
- Avoid mass of enemy forces.
- Minimize water crossings.
- Positioning of available forces important.
    -- Can be changed during current operation to facilitate subsequent operation
(this can be costly).
    -- Must balance against why they were positioned there in the defense to begin
with. Concept of defense is critical in this determination.
- Existing Corps boundaries constrain movement of forces.
- Boundary Changes.
    -- Can be requested, but change takes time and coordination.
    -- Very difficult in allied environment.
    -- Can assume boundaries will not be changed soon after start of operation.
- Terrain important.
    -- Movement speed.
    -- Ability to maneuver.
    -- Brigade cannot straddle major obstacle to movement.

4.2.1.5.3 *Deception*.
- Geo locations can constrain which force operates in which area.
- Deception force does not share Avenue of Approach with main effort.
- At least two AA's for operation with main and deception efforts.

4.2.1.6 When Parts: The selection of <u>When</u> parts is also influenced heavily by the METT-T (Mission, Enemy, Terrain, Troops available, Time) factors. It is common to consider METT-T factors not previously considered when selecting <u>When</u> parts. Initial development will put little, if any specificity on time.

4.2.1.6.1 *Phasing*.

- If corps task is phased then tasks to subordinates should also be phased in conjunction with phasing in corps task.

- Gradually will specify times.

-- Certain standard time blocks exist that are not variable (e.g., movement of large forces, road movement).

-- Integrate pieces of known time into lines where you are not sure of timing.

-- Attempt to reach decision points. Decision points have to be backed off to allow you to do whatever it is you have to do.

- During operation planners will readjust (future?) time lines to account for operation as it is being conducted. This is necessary to measure effect of things happening that were not forseen.

4.2.1.6.2 *Counterattack*.

- Speed is extremely important in counterattack.

4.2.2 <u>General Process Characterization</u>. A general characterization exists for those categories which are strongly dependent on the analysis of the METT-T factors. This characterization can be stated as follows:

> **In selecting those parts that will be assembled into a Scheme of Maneuver you must consider all you know about all the factors of METT-T. As you do this certain parts will be eliminated as being not applicable to the situation. This leaves a set of parts which are potentially useful for this problem. This set of parts is further analysed in the context of the METT-T factors to select those which are <u>best</u> for the situation.**

The following comments relate to this description of the selection process.

- Best. The term "best" needs to be further defined. It is clear that the concept of an "optimal" solution does not apply. Best in terms of suitable is more appropriate.

-- If the corps was operating in a staff planning mode then there would be many best solutions, each defining an alternative Course-of-Action.

-- Suitability is often in the eye of the beholder.

- Assembly. Whatever is selected must also be put together correctly. The term "correctly" also needs to be further defined. At a minimum there seems to be two levels of correctness:

-- The assembly is correct at the first level if it does not violate operational principles. If an assembled Scheme of Maneuver does not meet this criteria then it is a bad Scheme.

-- The assembly is correct at the second level if it is acceptable to the commander. This is strongly dependent on the personality of the commander. A good Scheme is correct at the first and second level.

4.2.3 <u>METT-T Factor Relationship</u>. Any planning situation is uniquely described by a discrete set of METT-T factors. The number of potential combinations of factors which may exist is, for all practical purposes, infinite. Each of these combinations produces a corresponding discrete set of METT-T factors. Further complicating

this is the fact that planners often have incomplete knowledge of the actual set of factors relevant to their particular problem, and the nature of this incompleteness is often unknown as well. Due to this incompleteness, a planning situation may be described by one of a number of discrete sets of METT-T factors, each of which captures a different incompleteness.

4.2.3.1 Higher Level Situation Descriptors. Planners find it useful to capture higher level situation descriptors from the information in the discrete set of METT-T factors describing the planning situation. These higher level descriptors are then used in the part selection process.

4.2.3.1.1 *Relative Strength*. Relative strength is a comparison of enemy and friendly strengths and weaknesses, and their ability to employ those strengths and attack those weaknesses. All factors of METT-T contribute to the assessment of relative strength.
- Relative strengths can be described by place and time. In this case the the METT-T factors would describe a number of different relative strength descriptions, each differing in place and time.
- Strength computations involve all that is known about the following METT-T factors:
-- Enemy forces available.
-- Friendly forces available.
-- Terrain over which the forces are to deploy.
-- Terrain over which the forces are to move.
-- Time available in which to move.
- The Mission factor may affect which other METT-T factors are actually considered in the determination of relative strength. This is particularly true in considering the enemy forces.

4.2.3.1.2 *Center of Gravity*. Center of Gravity refers to the enemy force. It is the object that, if seized or destroyed (potentially other Why parts may fit here as well) by friendly forces, will cause the enemy the most damage and allow the corps to accomplish its mission.
- Center of Gravity may be a piece of terrain.
- Center of Gravity may be an enemy force.
- Center of Gravity may be an installation.
- At higher echelons, Center of Gravity may refer to concepts like tempo of operations, destruction of forces, and threats.

4.2.3.1.3 *Relative Mobility*.
-The first thing a commander wants to know about terrain are the go/no-go areas in it, because he wants to know where he and the enemy can maneuver.
-- Go/no-go information is a composite of slope, soil characteristics, vegetation, etc. It is an appropriate level of information for the commander.
- One determines go/no-go areas first, because if one can't maneuver there, then it is useless to be there. If friendly forces are restricted from moving there, then so is the enemy.
- Overlays that showed the rates that a specific type of vehicle could attain in different regions may be useful. An example would be displaying different regions where a T-72 tank could move at 1-5 km/hr, 5-10 km/hr, etc. This type of information may be important in regions near defended terrain (e.g. a defender would need to know about a concealed area near his defenses that permitted 1 km/hr movement).

4.2.3.1.4 *Key Terrain*. Key Terrain is any terrain, the possession of which gives the owner a specific advantage.
- At corps, the following terrain features often contribute to Key Terrain.
-- Natural terrain obstacles.
-- Road networks.
-- Air avenues of approach.

-- Bridges (given conditions: river cannot be forded, and, river cannot be bridged with tactical bridging, and, no other class 60 bridges exist across river).

- Force composition is an important factor in determining key terrain.

- Terrain characteristics to evaluate include: on- and off- road trafficability, visibility.

4.2.3.1.5 *Avenues of Approach (AA)*. The AA is another high level situation descriptor

- At corps level divisional AA's are major AA's and regimental AA's are minor AA's.

- If terrain is characterized by many minor AA's and few, if any, major AA's, then it may be desirable to gather minor AA's into fewer major AA's. It must make tactical sense to do this, however.

- Two-phase AA determination. First, look for terrain-supported approaches. Second, match to enemy disposition to prioritize likely use of AA's.

- Air AA's are also important. Three types of air AA's are of interest: Airmobile force approaches, high-performance aircraft approaches, and helicopter gunship approaches.

4.2.3.1.6 *Defensible Terrain*. When in a defensive or counterattack posture, one looks for terrain that provides an advantage. Desirable features include elevation, fields of fire, observation, and cover. The standard OCOKA (observations and field of fire, concealment and cover, obstacles, key terrain, and avenues of approach) features are desired.

- General. To determine defensible terrain at Corps level one looks at significant terrain features that provide advantages. Examples include a river that would be an obstacle to enemy movement; or a ridgeline.

-- Defensible terrain enhances the ability of the defender to kill the enemy. If the enemy is at an advantage and the defender has a disadvantage because of terrain, that terrain is called key terrain. If there is a higher hill mass behind ground occupied by an enemy force, that occupied ground is not considered key terrain.

-- There is not a fixed relationship between obstacles and defensible terrain. An obstacle does not necessarily constitute defensible terrain.

-- Trafficability in and out of an area is an important consideration in identifying defensible terrain.

--- Consider a ridgeline with a backslope that has all the properties of defensible terrain. Further assume that there is only one ingress path that proceeds to a mountain pass directly behind the occupier's position. If that pass were blocked, the occupier's entire force would be locked in. This ridgeline may not be useful as defensible terrain. Access and the ability to maneuver are important considerations in identifying defensible terrain. The defender does not want to get cut off.

-- Defensible terrain provides a position that allows you to fire on that obstacle, provides protection from enemy fire and observation, and allows you to maintain that terrain.

--- Terrain may be more defensible, in some cases, by a weapon that provides a long range kill capability versus one that provides a short range kill capability.

--- Consider a wadi or a riverbed in the desert. This is not defensible terrain, but it may be an obstacle. Now consider a ridgeline with a back slope that permits moving up, firing, and moving down. The enemy cannot observe until one is in the firing position, and cannot place direct fire when one is in the down position. If the ridgeline dominates the area of operations in the sense of key terrain and provides an advantage to the unit holding it, then it is defensible terrain.

-- Terrain permits defense if one can: roll back to subsequent positions; come "out of the hide"; engage a kill zone; and maneuver behind the terrain.

-- A particular piece of terrain is defensible if:

--- Because of the features inherent in the terrain, it can be defended.

--- The advantage is to the occupier of the terrain (e.g. can roll back to subsequent positions, come out of hide, engage a kill zone, maneuver behind the terrain).

--- Simply occupying the terrain gives one dominance over the terrain in front.

-- Defensible terrain is terrain that puts the advantage to the unit controlling it. It allows that unit to inflict more casualties on the enemy, by controlling the terrain, than the enemy can inflict in retaliation.

--- If a piece of terrain is easily bypassed by the enemy, it is no longer defensible. Actually, it may be defensible, but it ceases to be important if it is bypassed.

-- The mix and composition of friendly forces determines what is defensible terrain. Terrain must be identified for situating artillery, for situating anti-tank weapons, for placing infantry, etc. To illustrate, for a force with no tanks, finding terrain for tank defense is not a major concern.

-- Enemy Force Considerations.

--- If Threat forces had a weapon such as FOG-M (fiber optic guided missile), this would be a source of considerable concern. Defensible terrain would require cover and concealment from overhead observation. Concealment would consist of screening from radar detectors and vegetation. The intent would be to make an armored force undetectable. Such a weapon would make defensive terrain even more important, because of the necessity to camouflage positions.

--- Soviet doctrine and tactics emphasize bypassing forces to achieve planned objectives. Defensible terrain should be chosen to stop Soviet advances.

- Defense Operation.

-- In planning where to make the best defense at Corps level, one looks at prominent terrain features that dominate the area.

--- One looks for terrain that ties together friendly forces, that provides continuous observation over the whole area, and that dominates a significant obstacle.

-- If there is uncertainty about holding positions well forward, then successive positions are considered.

--- One might look to a phase line where the enemy advance could be delayed for twelve hours; then decide go back to another position and delay the enemy another twelve hours, etc. During this delay action one is looking for terrain that will provide an advantage over the attacking force.

-- Defensible terrain should be protected by either man-made or natural obstacles; and by avenues of approach so there is no fear of being dislodged.

--- Placing three cavalry troops in a bowl does not yield a defensible situation, because there are two brigade-sized avenues of approach into the bowl. Nothing has been provided to enhance the ability to inflict heavy casualties on the enemy.

-- Defensible terrain is not identified as such until a plan exists. There must be at least a rough formulation of intended actions, and an estimate of what the enemy will do, before key terrain can be identified.

-- Begin by analyzing terrain and looking at avenues of approach (or axes of advance). Now one can make statements such as: if the enemy comes this way, then this becomes defensible terrain.

-- Enhancing Defensible Terrain. A Corp can allocate the resources of an Engineer Brigade for integrating man-made obstacles with natural ones. This is done soon after the decision to defend is made, and it is a closely examined activity.

--- To illustrate, suppose an outer river with only one approach is to be defended. Then that approach will be mined or tank traps will be placed there.

--- Enhancing defensive positions does not equate to simply creating obstacles. One may enhance defensible terrain by adding cover and concealment. However, adding obstacles does enhance the defender's position even more.

--- Obstacles prepared in conjunction with defensible terrain are made with the intent of putting direct fire on them (with the occasional exception of minefields).

4.2.3.2 Specific METT-T Relationships to Part Selection. A number of comments were made regarding the relationships between the METT-T factors and part selection and assembly.

- It is usually the case that if the enemy is strong relative to friendly forces, then options which fall into the BOLD category should be rejected.

    -- Bold options usually involve an offensive form with a degree of risk.

    -- It is not possible to classify parts as possessing or lacking boldness.

    -- In this case, bold refers to assembly, and the options are different assemblages, not different selections.

    -- Exception: It may be that the enemy is so strong that only a bold option will be successful.

- Why parts.

    -- Consideration of mission may dictate a series of Why parts.

    -- Why parts associated with Who parts may be different than Why part for corps, but they must facilitate the corps Why part.

    -- As the relative strength favors friendly forces, the destroy enemy force Why part is more feasible.

- What parts. No comments.

- How parts. Relative strength is major determinant of How parts. Of particular importance is the manner in which the different How parts change relative strengths.

    -- How parts must gain the relative strength required at all points. In other words, they must implement the principles of war: Mass and Economy of Force.

    -- Relative strength allows elimination of a number of How parts.

- Who parts. No comments.

- Where parts. No comments.

- When parts. No comments.

    4.2.4 Concept Development Knowledge. The following organizes concepts around the criteria used to develop and compare alternative Concepts.

    4.2.4.1 General Evaluation Criteria. These criteria apply for all contingencies.

- Supports overall mission. This is an assessment of end state provided by COA. Criteria for end state comparison are situation dependent.

    - Probability of success by phase of operation. Phases are Concept dependent.

    -- It is desirable to minimize the number of phases being planned.

    -- In general, want to plan (can only plan) for three to four phases into future.

    - Command and Control (C^2).

    -- Span of control.

    --- Corps.

    ---- Introduction of new MSC complicates span of control.

    --- MSC's.

    ---- Potentially less effective to allocate combat resource to unit in contact than to unit not in contact. Introduces risk.

    ---- Allocation of combat resource more desirable if forces have worked before in similar relationship.

    ---- The greater the standardization of SOP's between forces the more desirable is the allocation of combat resources.

    --- Span of control measures include number of subordinates as well as number and importance of tasks assigned.

    -- Communications Interoperability.

    -- Personalities of subordinate commanders and their compatibility with tasks assigned.

    -- Form of C^2 relationships.

    - Complicating Factors.

-- Task Organization changes during operation.
- Logistics.
    -- Supportability of Task Organization changes.
- Flexibility.
    -- Allocation of "too many" resources to a single MSC reduces flexibility and increases likelihood an accident will lead to failure of entire operation. This can become a very strong negative in further development of a Concept.

4.2.4.2 Specialization for Planned Counterattack.
    - Supports overall mission.
      -- Additional criteria.
        --- Accomplishment of defense objective.
        --- Speed to objectives.
          ---- Must wargame (i.e., choose actions and reactions of blue and red forces and envision their effects) movement force on axis to objective.
        --- End Strength on objectives.
          ---- Must wargame movement force on axis to objective.
          ---- If same unit for penetration and movement then can assume remnants of entire force will get to objective.
          ---- If separate unit for penetration and movement then can assume only remnants of movement force will get to objective.
          ---- End strength deficiencies can be overcome by Task Organization changes en route to objective, but this introduces a complicating factor.
    - Probability of success by phase of operation.
      -- Phase 1: Movement to positions.
      -- Phase 2: Penetrate enemy lines.
      -- Phase 3: Movement to objectives.
      -- Phase 4: Actions after seizing objective.
    - Command and Control (C^2).
      -- Additional Criteria.
        --- Passage of Lines.
          ---- Should be evaluated from corps perspective as well as from executing commander perspective.
          ---- More difficult when corps must get directly involved with conduct of passage.
          ---- Separate penetrate and movement forces implies corps must: 1) control penetrate action; 2) control movement through penetration, and 3) coordinate timing of actions related to above.
          ---- Combined penetrate and movement tasks place control burden on force assigned tasks. This is the best way to conduct a passage of lines.
          ---- Separate brigade passing through division creates problems in coordination of passing efforts and control at passing points.

4.2.4.3 Specialization for Deception.
    - Separate entities under corps control.
      -- Facilitates creating deceptive movement patterns.
      -- Facilitates creating separate communications patterns.
      -- May confuse enemy identification efforts.
    - Extensive allocation of combat assets to single MSC.
      -- Facilitates creating image of additional MSC.
      -- Facilitates creating image of additional corps.

-- May facilitate hiding uncomitted forces.

4.2.4.4 Wargaming. Wargaming is a technique that is useful in evaluating, developing and refining partially- or fully-developed Schemes of Maneuver (SM).

4.2.4.4.1 *Some General Rules of Engagement for Evaluating a SM*
- If corps is conducting a penetration, then forecast a location at the FLOT where a friendly division can be put against an enemy regiment (combat ratio in favor of corps at least 3:1)
- If a corps is a prepared defender, then that corps should be able to destroy an enemy force six times its own strength.
- If the corps will attack in daylight, then it is necessary to have lots of artillery and smoke.
- A daylight attack helps with passage of lines.
- An evening passage of lines without night-vision devices is very dangerous.
- No rule for meeting engagements. Although a planner will estimate the combat ratio necessary, these situations are too variable to have a general rule.
- Before wargaming any AA, the time-to-objective for corps forces is estimated (extremely important estimate). If delays are identified in wargaming process, corps must overcome them.
- Evaluation criteria include SM ability to:
-- Cause delay of certain units at certain locations.
-- Cause commitment of certain units at certain locations.
-- Result in primarily soft targets between location of CoA execution start and corps' objective.

4.2.4.4.2 *Wargaming a particular Avenue of Approach (AA) for a corps counter-attack.*
- Before selecting a particular AA to wargame, corps already has terrain analysis products in area as part of original intelligence estimate. Intelligence people looked forward and to rear in area of operations.
-- Look for potential AA to use.
---Look for AA which avoids hitting enemy head on (we must project enemy locations).

--- Does it support fast movment?
--- Does it support large force (Bde forward and Bde follow-ons)?
--- Obstacles.
--- Does it meet with location where enemy is most susceptible to penetration?
--- Can control be maintained (does terrain support easy movement)?
--- Does road-net flow in direction of attack?
--- Steps in AA Evaluation:
---- G2 Planner identifies all trafficability problems (what-if process along entire route).

---- G2 Planner identifies size of unit which can be kept forward and moving.

---- Operator decides whether to go with current status of bridges or to add bridges.
- What-if Process:
-- G2 Planner gets estimate on how long it will take enemy to get to corps objectives.

-- Starts at corps' expected location for D+3; the assembly area.
-- For whole axis of advance he asks if each bridge is intact and each autobahn interchange is intact.

-- Do bridges support wheels or both wheels and tanks?

-- He gets information on escape routes for refugees (corps probably won't use these as general AA's).

-- Which unit of corps will conduct a passage-of-lines to (unit will be no smaller than Bde)?

-- What size enemy force and resistance is this unit experiencing?

--- Has this unit suffered heavy casualties?

--- What is the unit doing (e.g., withdrawing, defending, ...)?

--- Can this unit hold what it has got or will it need to move back some?

-- What is extent of contact along entire front trace of the corps; not just location of passage point. This is used to shift all available artillery to location where passage of lines will occur.

-- What is the situation in terms of Spetznatz and partisan forces where passage of lines will occur? Used to designate a unit in corps to handle this problem.

-- What is the situation of enemy force in contact with the corps' unit?

--- Tank or MR?

--- Length of contact and strength.

--- Current commander.

--- Response times in command and control.

-- How many air sorties will corps have available. Unavailability of close-air support probably won't result in discarding a given SM. But availability would support adopting a given SM. Close-air support increases in importance as expected enemy resistance increases.

-- In wargaming a SM, the planners won't vary the friendly force strength (after FLOT is passed) to estimate its influence on the SM. Planners will assume combat power will be sufficient to continue the corps' mission.

-- What are the corps' capabilities to keep its corridor (to rear) open. The success of a corps penetration must be followed by efforts to keep corridor behind corps open. Corridor must be held open until corps has a link-up with another corridor.

-- For passage of lines operation, corps determines what will overtax division's capabilities and will determine what corps has available to give to division to help them. Division can be overtaxed by:

--- Artillery bullets depleted.

--- Smoke depleted.

--- Fuel depleted.

4.2.4.4.3 *Special Wargaming Information Requirements*.

- Information Required on Enemy. This information is used to determine how well the SM forces the enemy into a desirable situation for the corps.

-- At corps level, wargaming is done on Soviet Front.

--- Corps considers when the Front would have to react.

--- Corps considers the form of the Front's reaction. Front's reactions include reallocating units to stop a threat in a particular location.

-- Which echelon Armies are attrited.

-- Composition of next Front

-- Next Front's distance from line of contact

-- Disposition of Armies in next Front

-- Activities of next Front

--- Their capability (composition, strength, and status) to resist the corps between the corps' objective and the location where the corps' new CoA will begin 3 days from now.

-- What enemy units are going to be on the objective.

-- When will we see enemy combat units on the objective

- Target engagement zones. This information is used to estimate:

-- How enemy will move from location to location.

-- When corps will need air power.

-- When enemy will be in particular locations.

-- What actions corps can take to force enemy to move in a certain direction.

- Terrain Information Required:

-- Terrain and critical terrain features along axis of advance.

-- Status of each bridge

-- Status of towns

-- This information is used to decide what strategy should be used to avoid being delayed in reaching the objectives. Strategy options include:

--- Engineer efforts

--- Use alternate routes

- Logistics information required:

-- Examine friendly units to determine equipment densities.

-- Has unit been committed recently.

-- Does unit have all equipment on hand.

-- Equipment status.

-- Have all major end-items.

-- Can it move with POL.

-- Can it shoot with class 5.

-- If a major shortfall exists relative to self-sustainment capability, then corps either:

--- Changes concept.

--- Logistician needs to get required fuel and/or ammo. (If unavailable in time required, then concept must be changed or task organization changed or switch logistics priorities from units in-contact now to the corps.

4.2.5 Category Sequence. A loose sequence exists which relates the part selection process. Almost always the Why parts are selected first. Selection of these parts will establish a framework to assist in the selection of other parts. Additionally, the selection of the Why parts may influence the sequence for selecting the remaining parts. It is common (but not always true) for the What parts and How parts to be selected next. Normally these are selected together. Again, it is common, but not always true, for the Who parts and the Where parts to be selected next. It is almost always true that the When parts are selected last. The following diagrams attempt to capture this sequence:
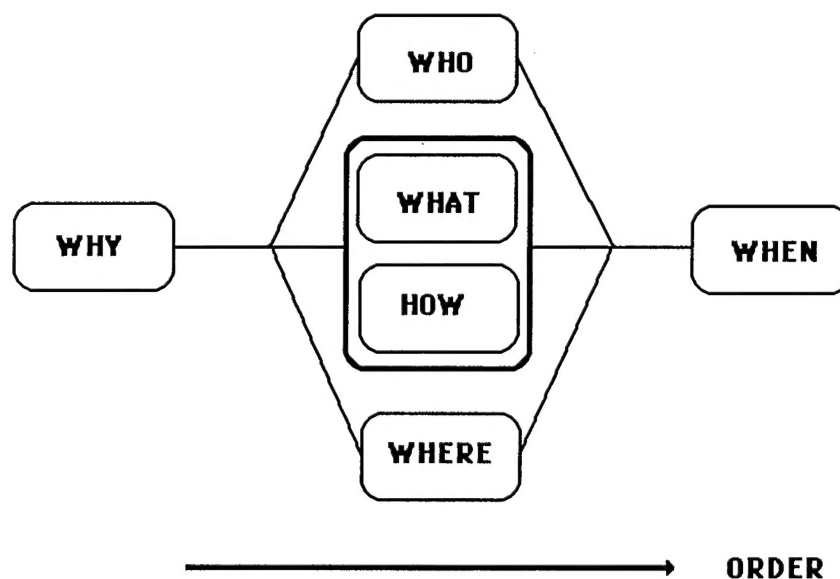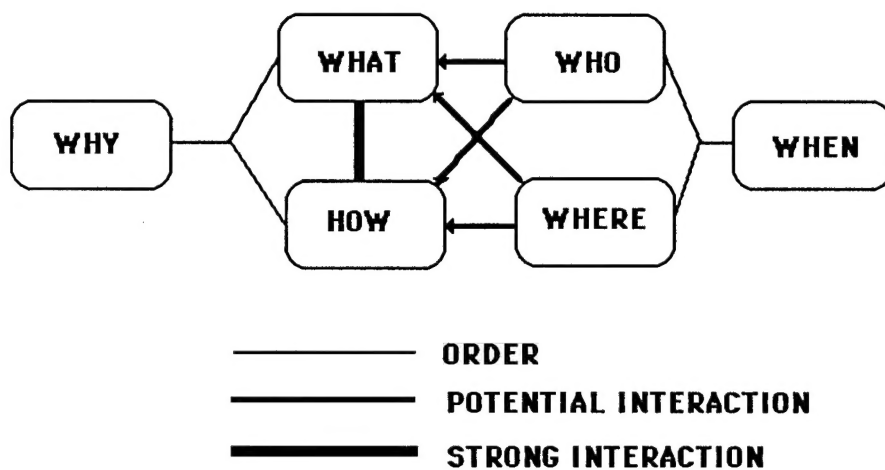
5. TASK ORGANIZATION. The following organizes concepts discussed in the session around the Task Organization portion of the Concept.

    5.1 RELATIONSHIP TO COMMAND AND CONTROL MEASURES (C^2M).
        - C^2 weak points can be overcome by Task Organization changes.

5.2 TASK ORGANIZATION CHANGES.
- As a rule of thumb a Task Organization change by corps takes 24 - 36 hours to completely effect.
-- ACR takes longer to chop than a brigade due to communications incompatibilities.
-- Logistics changeover.
--- Need to go through at least one log cycle.
-- Operational changeover easier.

5.3 FACTORS. Significant factors considered are the number of troops available, type of forces available (NOTE: The distinction between Armored and Mechanized is for all intents meaningless), and personalities of subordinate force commanders. As the force types become more similar, the importance of commander personalities increases. Another important point is that the corps has many assets to allocate. It normally is not necessary or desirable for the planners to break up maneuver assets into smaller pieces (for example, take a brigade away from a division) Another way to state this is that unit integrity is an important and desirable factor in allocating maneuver elements. It becomes less important in allocating non-maneuver forces.
- Unit integrity is of most concern when allocating maneuver assets. At the corps level the situation may very well <u>dictate</u> allocating maneuver resources of one division to another division (e.g., chopping a brigade), but in these situations the following statements are usually true.
-- The maneuver unit being allocated additional resources possesses insufficient combat power to accomplish the tasks assigned.
-- It is not desirable to allocate corps-level non-maneuver resources to the unit to make up for the combat power shortfall (or, alternatively, the planner would first look for other, non-maneuver resources, to allocate).
-- It is not desirable to allocate tasks in a different manner.
- Unit integrity is less of a factor when allocating the following types of resources: Engineers, Aviation, Air Defence, Signal, Artillery.
- TO may sometimes be based on the tasks allocated to the units in the TO.

6. <u>TASK ALLOCATION</u>. Personalities and types of forces within subordinate elements are critical factors in allocating tasks.

7. <u>COMMAND AND CONTROL MEASURES</u>. The following organizes concepts discussed in the session around the Command and Control Measures (C^2M) portion of the Concept.

7.1 CONTROL MEASURES.

7.1.1. <u>Knowledge about Control Measures</u>.

7.1.1.1 Blocking Position.
- Corps will normally establish blocking position for immediate subordinates only, if desired. Will not tell subordinate to establish position for subordinate. Example: Corps will not normally tell division to establish brigade-sized blocking position.
-- Normally give appropriate force and guidance indicating concern.
-- Task Organization changes are used to highlight these concerns.
-- An exception is when such a blocking position is crucial to win mechanism.
-- An exception exists when it is not clear who will control terrain of blocking position at time it is needed. Need to make clear that whoever occupies terrain at critical time does establish blocking position.

7.1.1.2 Boundaries.

- Boundaries are important in planning for the function they serve, which is to clearly indicate the reponsibility for specific terrain features. At a minimum, the boundaries must clearly indicate into which sector the following terrain features belong:

-- Key Terrain.

-- Avenues of Approach (AA). A basic law - Don't split an AA between units. Exception - Unless a single force is inadequate to cover an AA. This may result from a number of causes, which include, but are not limited to, the following: the course of the AA, terrain does not provide suitable defensive positions for a single unit, other AA's in the unit's sector.

-- Routes (RT). A rule of thumb - Don't split a road between units. Exception - All units need an MSR. If there is no other way to provide for an MSR then you have to split a road.

- As long as this terrain feature assignment function is satisfied, a precise definition of boundaries is not required for planning.

- Boundaries effect who controls battles.

-- Avenues of Approach affect where battles will be fought.

-- Boundary should indicate clearly who has Avenue of Approach, and thus who controls battle along Avenue of Approach. Conversely, Avenues of Approach should be allocated to subordinates.

- At one point in the discussion, it was agreed that precise unit boundaries were not important in developing courses of action. A general definition is sufficient, and the precise boundaries are best decided by the neighboring units.

8. SUPPORT PRIORITIES. Time was insufficient to address this portion of the Concept.